

## CLAIMS

What is claimed is:

1. A method of simulating fill flash in a camera system comprising the steps of:
  - a) determining distances from the camera to objects in a scene; and
  - b) taking a photograph of the scene; and
  - c) selectively adjusting the brightness of regions of the photograph based on the distance information.
2. The method of claim 1 wherein determining the distances from the camera to objects in the scene comprises:
  - a) taking a series of photographs with the camera configured to focus on objects at various distances from the camera; and
  - b) storing said photographs along with a focus distance for each photograph; and
  - c) analyzing the series of photographs and corresponding focus distances.
3. The method of claim 2 wherein the analysis of the series of photographs comprises computing a spatial contrast metric.
4. The method of claim 3 wherein determining the distances to objects at locations in the scene further comprises:
  - a) locating the particular photograph in the series of photographs with the spatial contrast metric indicating that objects at that location in the scene in more nearly in focus in that particular photograph than in any other in the series of photographs; and

b) identifying the distance from the camera to objects at that location in the scene as  
the focus distance stored in connection with that particular photograph.

5. The method of claim 1 wherein regions containing objects closer to the camera are  
lightened in the resulting photograph in relation to regions containing objects farther  
from the camera.

6. The method of claim 5 wherein regions are modified in the resulting photograph in  
accordance with the inverse square law.

7. A camera system which simulates fill flash by:

- a) determining distances from the camera to objects in a scene; and
- b) taking a photograph of the scene; and
- c) selectively adjusting the brightness of regions of the photograph based on  
the distances.

8. The camera system of claim 7 wherein the determining the distances from the  
camera to objects in the scene comprises:

- a) taking a series of photographs with the camera configured to focus on objects  
at various distances from the camera; and
- b) storing said photographs along with a focus distance for each photograph; and
- c) analyzing the series of photographs and corresponding focus distances to  
determine the object distances.

9. The camera system of claim 8 which comprises a computer separate from the  
2 camera, and wherein the series of trial photographs and their focus distances are  
transmitted to the separate computer for analysis and the simulation of fill flash.

10. The camera system of claim 8 wherein the analysis of the series of photographs  
2 comprises computing a spatial contrast metric.

11. The camera system of claim 8 wherein determining the distances to objects at  
2 locations in the scene further comprises:  
a) locating the particular photograph in the series of photographs with the spatial  
4 contrast metric indicating that objects at that location in the scene in more nearly  
in focus in that particular photograph than in any other in the series of  
6 photographs; and  
b) identifying the distance from the camera to objects at that location in the scene as  
8 the camera focus distance stored in connection with that particular photograph.

12. The camera system of claim 7 wherein the system lightens regions containing  
2 objects closer to the camera in the resulting photograph in relation to regions  
containing objects farther from the camera.

13. The camera system of claim 12 wherein the system modifies the brightness of  
2 regions in the resulting photograph in accordance with the inverse square law.

14. A camera comprising

- 2 a) means for determining distances from the camera to objects in a scene; and
- b) means for taking a photograph; and
- 4 c) means for selectively modifying the brightness of regions in the resulting photograph based on the distances.

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